What is claimed is:

1. An interface system coupling a fixed impedance node to a wide-band receiver for transmission of data signals of different data rates, the interface system comprising:

a first set of elements coupled to the low impedance node and the wide-band receiver for transmitting data signals at a first data rate during a first time period; and

a second set of elements coupled to the low impedance network and the wide-band receiver for transmitting data signals at a second data rate during a second time period.

2. The interface system of claim 1 wherein the first set of elements and the second set of elements have one or more elements in common.

3. The interface system of claim 2 wherein the one or more elements in common decouple a DC voltage associated with the data signals.

4. The interface system of claim 2 wherein the first set of elements comprises a first capacitor connected to the low impedance node and the wide-band receiver and a first resistor connected to the first capacitor, the wide-band receiver, and to an AC ground, and wherein the second set of elements comprises the first capacitor, a second capacitor connected to the AC ground, and a second resistor connected to the first capacitor and in series to the second capacitor.

5. The interface system of claim 2 wherein the first set of elements comprises a first capacitor connected to the low impedance node and the wide-band receiver, a first resistor connected to the first capacitor and the wide-band receiver, and a second resistor connected to the first resistor and to an AC ground, and wherein the second set of elements comprises the first

capacitor, the first resistor and a second capacitor connected to the AC ground and to the first resistor in parallel with the second resistor.

6. The interface system of claim 3 wherein the first set of elements are configured to provide a first time constant and the second set of elements are configured to provide a second time constant.

7. The interface system of claim 1 wherein the data signals are differential signals and the interface system has a differential circuit topology.

8. An AC coupling interface system coupling a low impedance transmission line to an amplifier for the non-simultaneous transmission of digital data signals at different data rates, the AC coupling interface system comprising:

a first capacitive element coupled to the low impedance transmission line for receiving the digital data signals;

a first resistive element coupled to the first capacitive element and to a reference voltage source, wherein the first resistive element and the first capacitive element are configured to provide a first time constant responsive to a first digital data signal at a first data rate; and

a second resistive element coupled between the first capacitive element and a second capacitive element, the second capacitive element coupled to the reference voltage source, and wherein the second resistive element and the second capacitive element are configured to provide a second time constant responsive to a second digital data signal at a second data rate;

9. The AC coupling interface system of claim 8 wherein the first capacitive element has a larger capacitance than the second capacitive element and the first resistive element has a larger resistance than the second resistive element.

10. The AC coupling interface of claim 9 wherein the first data rate is in the Kilobit per second range and the second data rate is in the Megabit per second to Gigabit per second range.

11. The AC coupling interface of claim 8 wherein the low impedance transmission line is one of the group consisting of a 50-ohm coaxial cable, a 75-ohm coaxial cable, a stripline, a microstripline, and a PCB controlled impedance trace.

12. The AC coupling interface system of claim 11 wherein the second resistive element provides impedance matching for the one of the group consisting of a 50-ohm coaxial cable, a 75-ohm coaxial cable, a 100-ohm twisted pair cable, a stripline, a microstripline, and a PCB controlled impedance trace.

13. A differential AC coupling network connected to a first node, a second node and a differential amplifier, the differential AC coupling network for the transmission of differential digital data signals at a low data rate and at a high data rate, comprising:

a reference voltage source for providing a DC bias voltage to the differential amplifier and an AC ground for the differential AC coupling network;

a first input capacitor connected between the first node and a first input of the differential amplifier;

a second input capacitor connected between the second node and a second input of the differential amplifier, the first and second input capacitors for providing DC voltage isolation;

a first load resistor connected between the first input capacitor and the reference voltage source;

a second load resistor connected between the second input capacitor and the reference voltage source, wherein the first and second load resistors in combination with the first and

second input capacitors are configured to provide a first RC time constant responsive to the differential digital data signal at the low data rate during a first time period;

a first series combination of a first matching resistor and a first low-value capacitor connected between the first input capacitor and the reference voltage source; and

a second series combination of a second matching resistor and a second low-value capacitor connected between the second input capacitor and the reference voltage source, wherein the first and second series combinations are configured to provide a second RC time constant responsive to the digital data signal at the high data rate during a second time period.

14. The differential AC coupling network of claim 13 wherein the first and second nodes are low impedance transmission lines.

15. The differential AC coupling network of claim 13 wherein the differential amplifier is an input stage of a wide-band receiver.

16. The differential AC coupling network of claim 13 wherein the first and second matching resistors have a lower resistance value than the first and second load resistors.

17. The differential AC coupling network of claim 16 wherein the lower resistance value is one of about 50 ohms, about 75 ohms, about 100 ohms or about 500 ohms.

18. An interface system coupling a low impedance node to a wide-band receiver for transmission of digital data signals at different data rates, comprising:

means for providing a short time response to a first digital data signal at a high data rate during a first time period; and

means for providing a slow time response to a second digital data signal at a low data rate during a second time period.

19. The interface system of claim 18 wherein the digital data signals are differential signals and the interface system has a differential circuit topology.

20. The interface system of claim 18 further comprising means for isolating a DC voltage from the low impedance node to the wide-band receiver.

21. The interface system of claim 20 further comprising means for providing a reference DC bias voltage to the wide-band receiver.

22. The interface system of claim 18 wherein the high data rate is between 500 Megabits per second and 3 Gigabits per second and the low data rate is orders of magnitude smaller than the high data rate.

23. The interface system of claim 22 wherein the high data rate is about 2.5 Megabits per second and the low data rate is about 9.6 Kilobits per second.

24. The interface system of claim 18 wherein the means for providing a fast time response further comprises means for matching a low output impedance of the low impedance node.

25. A method of coupling a fixed impedance node to a wide-band receiver through an AC coupling network for the transmission of digital data signals of multiple data rates, the method comprising:

providing at a first time a first transfer function associated with a first time constant of the AC coupling network in response to receiving a high data rate digital data signal from the fixed impedance node, the first transfer function for avoiding distortion of the high data rate digital data signal;

providing at a second time a second transfer function associated with a second time constant of the AC coupling network in response to receiving a low data rate digital data signals from the fixed impedance node, the second transfer function for avoiding distortion of the low data rate digital data signal; and

decoupling the low impedance node from the wide-band receiver with respect to a DC voltage.

26. The method of claim 25 further comprising matching an output impedance of the fixed impedance node with the AC coupling network for a maximum power transfer of the digital data signals.

27. The method of claim 26 wherein the output impedance is in the range of about 50 to about 500 ohms.